COLUMBIA TECHNICAL CORPORATION
WOODSIDE , NEW YORK 11377

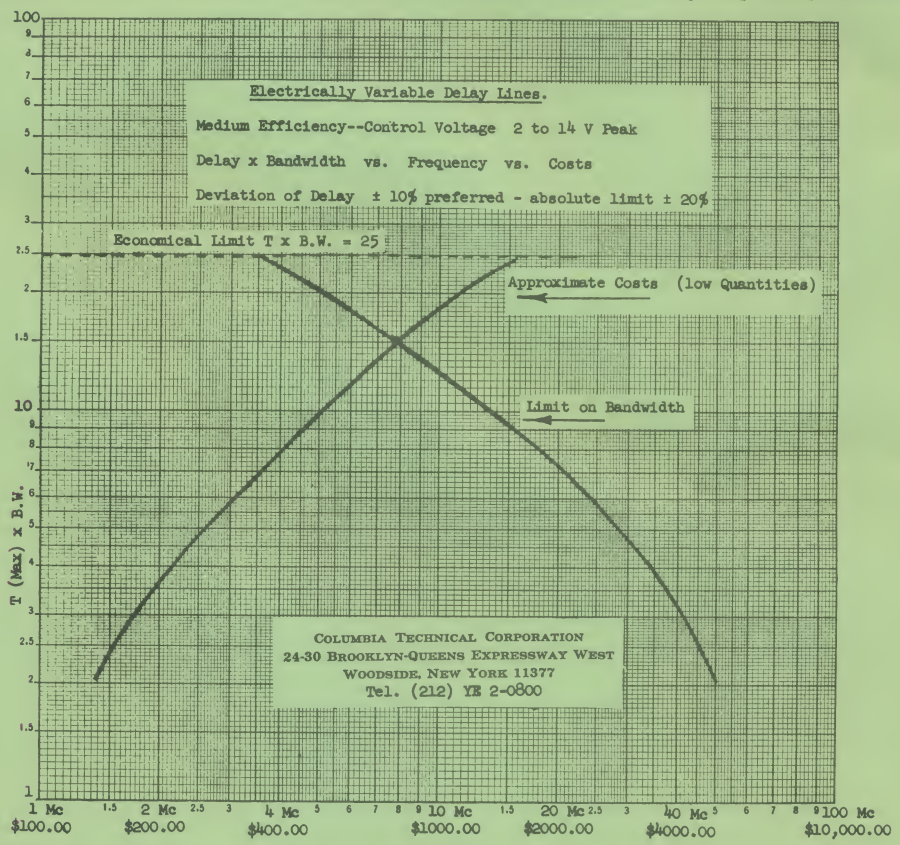
NEWS RELEASE

ELECTRICALLY VARIABLE DELAY LINE
(EVDL) SELECTION GUIDE

#764

Columbia Technical Corporation, Woodside, N. Y. 11377, has published a Characteristic Guide for Electrically Variable Delay Lines, in graph form, which plots the product (Delay Time x Bandwidth) versus Frequency and Costs.

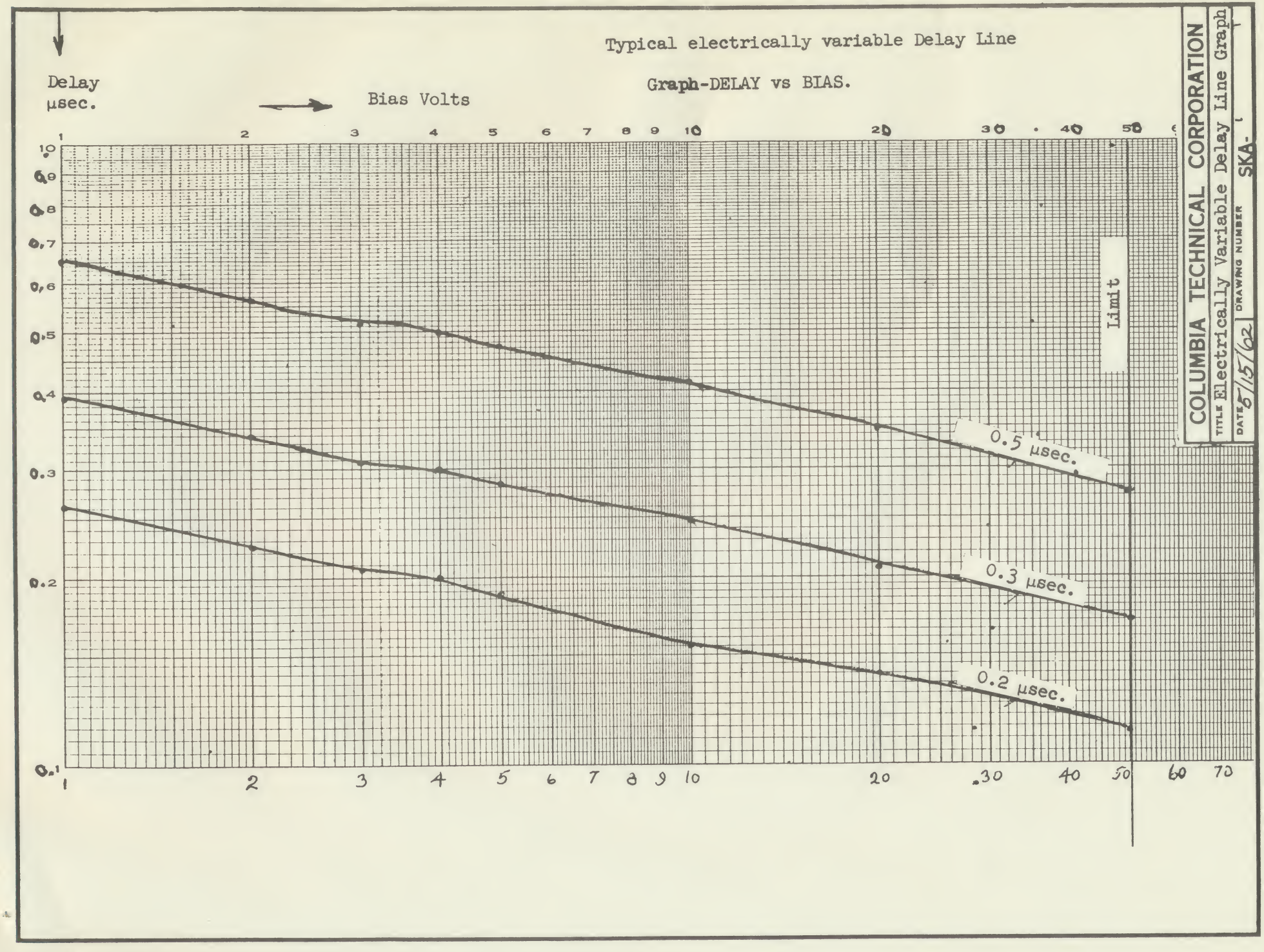
Interest in EVDLs as semi-active components has been increasing. They are complex devices and the user will find the Graph an aid to better understanding their optimum characteristics under varying requirements.



Further information and technical assistance may be obtained from Columbia Technical Corporation, 24-30 Brooklyn-Queens Expressway West, Woodside, N. Y. 11377

Typical electrically variable Delay Line

Graph-DELAY vs BIAS.



COLUMBIA TECHNICAL CORPORATION
WOODSIDE 77, NEW YORK

NEWS RELEASE

FOR IMMEDIATE RELEASE

ELECTRICALLY VARIABLE DELAY LINE

A new Delay Line which is variable electrically is announced by Columbia Technical Corporation, Woodside 77, N. Y. The unique feature of this line, known as Type 1460, is its ability to provide continuously variable delays from minus to plus 10% of nominal value, with infinite resolution, by varying a DC potential superimposed on the input signal, without appreciable performance degradation. Type 1460 is rated 0.2 usec delay at 95 ohm impedance, and displays high fidelity frequency response with a rollover at 60 Mc.

Columbia Type 1460 Delay Line is normally employed as a precise vernier device for a fixed delay line for zeroing coincidence circuits, especially in radar systems. It will perform with high fidelity with either low level CW or video pulses within the 60 Mc frequency spectrum.

Delays above 0.5 usec are not practical primarily because of economic limitations. Delay time variations of up to plus or minus 50% of nominal are feasible, but recommended only for applications where high fidelity is not a prime requirement.

Delay variations inherent to associated components in the systems can be automatically compensated with a low-inertia servo which may be operating this voltage sensitive delay line for zeroing.

1. Voltage Requirements: 1V to 50V.
2. Package: 1-3/8" x 1-3/8" x 12"
3. Coaxial Input and Output
4. Size and layout of terminals can be changed to satisfy customer requirements.

Price: Depending on specs. and tolerances.
Availability: 3-6 weeks.

Additional data can be secured by writing the manufacturer, Columbia Technical Corp., Woodside 77, New York

COLUMBIA TECHNICAL CORPORATION

WOODSIDE 77, NEW YORK

NEWS RELEASE

#364

ELECTRICALLY VARIABLE DELAY LINES

Columbia Technical Corporation, Woodside 77, New York, offers an extensive line of electrically variable delay lines for applications over a wide range of low, medium, and high frequency spectra with high performance capability. The extensive line is the result of the success and acceptance achieved by EVDL's since they were introduced in 1961 by Columbia Technical Corporation. The first EVDL was used as a vernier device only, in the Quartz delay-line range.

An EVDL uses the simplicity of a lumped-constant delay line to avoid stringent limitations on the delay-bandwidth product. The required bias voltage, which may be either AC or DC, is of extremely low power. Where automatic operation is desired, EVDL's simplify the use of low-inertia servo loops. Additional circuitry used to improve the performance of electrically variable delay lines, whether servo or impedance matching devices, are less complicated and of higher reliability than the use of carefully matched voltage and current generators of high power consumption.

It should be noted that any voltage-controlled delay line has the inherent tendency to introduce discontinuities if operated over a large deviation of delay, with mismatch being proportional to deviation. Some systems are desensitized against such distortions and some are designed to match the continuously variable impedance of the EVDL. For sensitive applications two patents by W. R. Johnson (Nos. 2828478 and 3049589) describing continuously matching terminations should be considered.

EVDL's are available in the following typical ranges, with delivery of 4 to 5 weeks:

Type	Delay μsec	B.W.-3Db	Variation of Delay	Impedance Center Value	Price
2462	50	0.4Mc	±20%	3000 ohms	$1,250.00
2148	17	1Mc	±10%	2500 ohms	$965.00
1865	1.0	6Mc	±10%	1000 ohms	687.00
2359	0.35	12Mc	±10%	190 ohms	264.00
1460	0.30	30Mc	±10%	91 ohms	2,000.00

For additional information on these and other types, address requests to Columbia Technical Corporation, 24-30 Brooklyn Queens Expressway, West, Woodside 77, New York. Inquiries will receive prompt attention.

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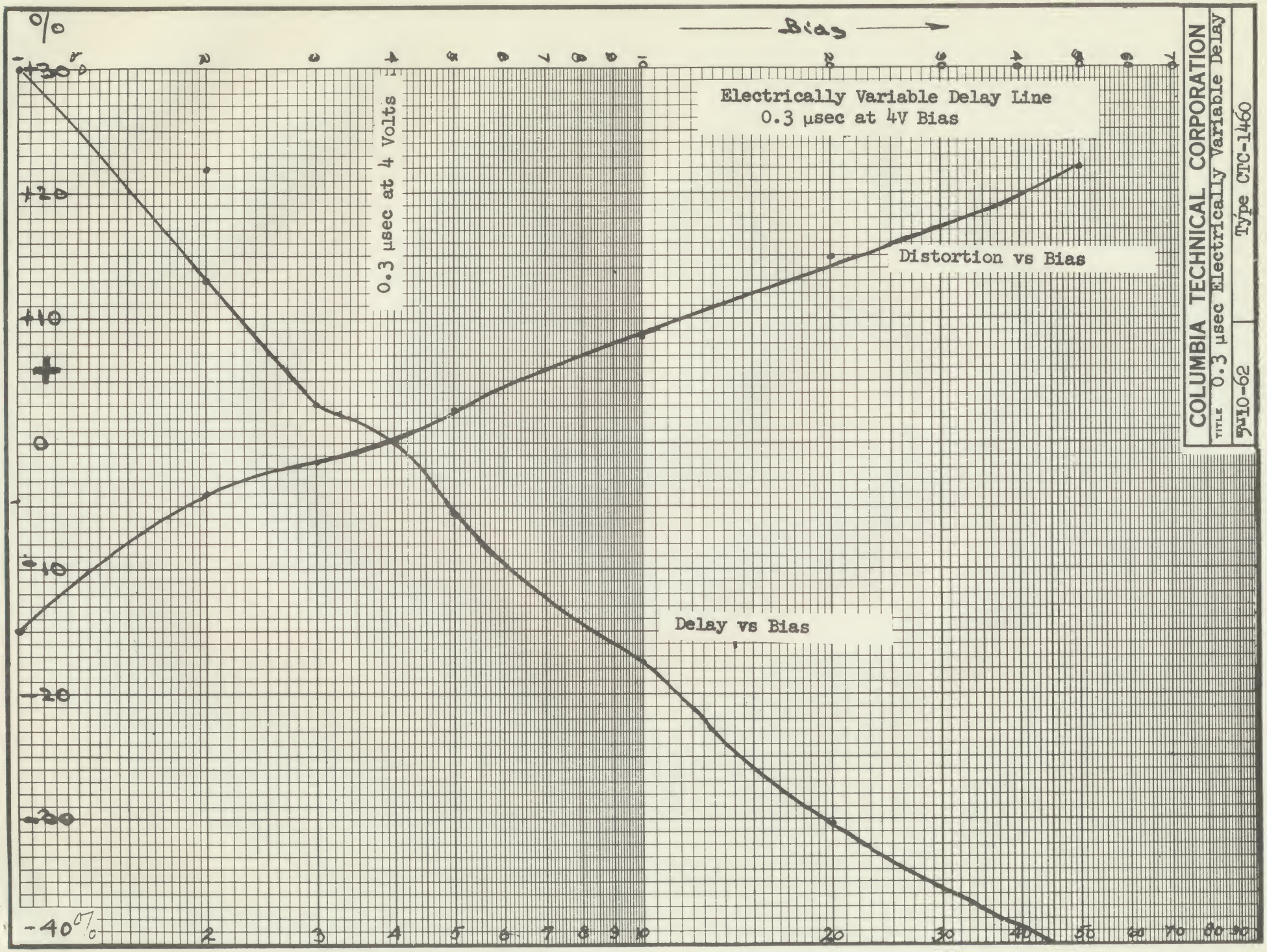

%
Bias
Electrically Variable Delay Line
0.3 μsec at 4V Bias
0.3 μsec at 4 Volts
Distortion vs Bias
Delay vs Bias
+30
+20
+10
0
-10
-20
-30
-40%
COLUMBIA TECHNICAL CORPORATION
TITLE 0.3 μsec Electrically Variable Delay
DWG 010-62
Type CTC-1460

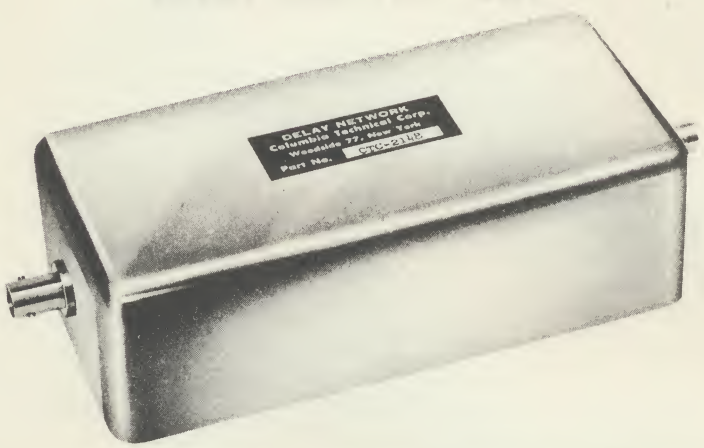
COLUMBIA TECHNICAL CORPORATION

WOODSIDE 77, NEW YORK

NEWS RELEASE

FOR IMMEDIATE RELEASE

NEW ELECTRICALLY VARIABLE
DELAY LINE CTC - 2148



In March, 1962, Columbia Technical Corporation, Woodside 77, New York, first introduced their electrically variable delay line. This was an outstanding contribution to this important sector of the electronics industry. Since then, similar components with advanced concepts have been designed and produced. These have proven to have electrical and physical reliability characteristics much desired in many critical areas.

Columbia Technical Corporation's latest achievement, delay line CTC-2148, is a worthy member of their electrically variable group and features long delay variation. It has ability to provide continuously variable delays of ± 1 usec with infinite resolution and without appreciable performance degradation. This is accomplished by varying LC potential superimposed on the input signal. The nominal delay is 17 usec at center delay and the mid-frequency impedance approximates 2500 ohms. Bandwidth of this unit runs from 600 Kc to 1 Mc and its distortion is below 3% over the full range. These specifications are contained in a surprisingly small, hermetically sealed, package measuring 6-1/2" x 3" x 1-1/4".

Additional data on delay line CTC-2148 can be secured by writing the manufacturer, Columbia Technical Corp., Woodside 77, New York.

Price: Single Unit - $1,000.00

Delivery: 4-5 weeks

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